NON-PUBLIC?: N
ACCESSION #: 9409160118
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Joseph M. Farley Nuclear Plant - Unit 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000364

TITLE: Manual Turbine/Reactor Trip due to Loss of Condenser
Vacuum
EVENT DATE: 08/05/94 LER #: 94-001-00 REPORT DATE:

OTHER FACILITIES INVOLVED: N/A DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: R.D. Hill, General Manager TELEPHONE: (205) 899-5156
- Nuclear Plant

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: TC COMPONENT: PI MANUFACTURER: X999
REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

At 1459 on August 5, 1994, with the Unit in Mode 1 and operating at approximately 100 percent reactor power, the main turbine was manually tripped due to degrading condenser vacuum. This manual trip of the main turbine from 100 percent power initiated a reactor trip as designed.

Previous to the trip, work had been performed on a low pressure turbine gland seal regulator to repair a steam leak. Upon valving the regulator in after the repair, it was noted that the gland seal steam pressure was being maintained slightly above the normal band as indicated on the local pressure indicator. The regulator was adjusted to lower the gland seal pressure to the proper range as indicated on the local pressure gauge. This adjustment was made by an Instrument and Controls technician who was assisted by an Operations systems operator. The local pressure indicator was subsequently determined to be inaccurate and actual gland seal

pressure was too low to prevent air in-leakage into the main condenser. Shortly after completion of the above adjustments, condenser vacuum degraded rapidly, and upon reaching the administrative main turbine manual trip criteria of 2.7 psia, the control room operators tripped the main turbine. This initiated an automatic reactor trip per design. The Operations crew responded to the reactor trip as directed by plant procedures. The faulty gauge was replaced and the Unit was returned to service.

END OF ABSTRACT

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor.

Energy Industry Identification System codes are identified in the test as XX!

SUMMARY OF EVENT

A loss of condenser vacuum due to inadequate steam pressure being supplied to a gland seal TC! on the main turbine occurred on August 5, 1994, at 1459. Condenser vacuum degraded to the point that the procedural trip criteria for the main turbine was reached, The Operations crew tripped the main turbine manually per procedure and then responded to the automatic reactor trip which was initiated per design. All plant systems functioned as designed in response to the reactor trip.

DESCRIPTION OF EVENT

Repairs were made to a leak discovered in the gland seal regulator supplying gland sealing steam to the number four gland on the Unit 2 main turbine. During the time the repairs were in progress number four gland sealing steam was supplied by bypassing the gland regulator. After completing the repairs, the number four regulator was placed in service. Upon placing the regulator in service the observed gland seal pressure, based on the locally installed gauge (PI-510), was noted to be above the normal operating band of between 1 and 5 psig. The local gauge, which had been calibrated during the previous refueling outage, indicated a pressure of approximately 6 psig. In addition, a common gland sealing steam annunciator (high/low inputs) alarmed in the control room. The Instrument and Controls (I&C) group was contacted to adjust the regulator. The turbine building system operator (SO) and I&C personnel

were sent to the number four gland. I&C technicians adjusted the pressure control equipment while the SO monitored the number four gland sealing steam supply pressure at PI-510. Several adjustments were made until the local pressure gauge indicated approximately midrange in the normal operating band. At this point the SO observed that the number four gland seal supply pressure was satisfactory and reported this to the control room. The SO was told by the Operator At The Controls (OATC) that the gland sealing steam alarm, which had momentarily cleared, had returned and was in alarm. The SO returned to the local PI-510 and noted that pressure was still in the normal operating band. The SO indicated to the I&C technicians that no further adjustments would be necessary. The SO again called the OATC while the I&C personnel returned to the maintenance shop. The OATC requested the SO have I&C perform additional adjustments to clear the alarm condition. The OATC was told by the SO that I&C had left the area. The OATC observed the control room vacuum indication which was stable at the time. Although the OATC was concerned about the alarm condition which still existed, he did

not believe the problem to be urgent due to the stable indication of condenser vacuum. The SO left the area at this point to perform other duties. The OATC intended to discuss with the Shift Supervisor the need to have the I&C personnel return to make additional adjustments to clear the alarm. Shortly afterwards, before the OATC talked with the Shift Supervisor, the Unit Operator (UO) observed a rapid degradation of condenser vacuum. This condition was communicated to the turbine building SO, the OATC and the Shift Supervisor. The turbine building SO immediately proceeded to the number four gland. Upon arrival the SO noted the gland seal supply pressure local indication was still in the normal operating band. Even though the indication was within the normal operating band, the SO began to open the bypass steam supply around the number four gland regulator believing it to be the most likely cause of the loss of vacuum. During this same time frame the Shift Supervisor implemented the Loss of Vacuum Abnormal Operating Procedure. When the turbine vacuum degraded to the administrative limit of 2.7 psia (i.e., back pressure increased) the Shift Supervisor directed the operator to trip the turbine. The turbine was tripped just before the SO was able to increase the gland steam pressure. The reactor trip response procedure (EEP-0) was then entered and completed satisfactorily.

CAUSE OF EVENT

A root cause evaluation was conducted and identified the following causes:

1) Equipment failure of the local pressure gauge (PI-510) which was found to be unreliable and inaccurate. This was evidenced by post trip calibration of the gauge.

2) The OATC and SO did not adequately consider the significance of conflicting indications, and did not take contingency actions while resolving those indications. The OATC recognized an alarm condition was still being annunciated in the control room. However, since the local indication was reported as being in the normal band, and the vacuum indication in the control room was stable, the urgency of the main control room alarm was not apparent. Also, based on the local pressure indication and report of stable vacuum from the control room, the SO believed the number four gland seal pressure regulator to be stable and left the area to perform other duties.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This event is reportable due to the actuation of the reactor protection system. All systems operated as designed in response to the reactor trip

There was no effect on the health and safety of the public.

CORRECTIVE ACTION

The local pressure indicator was replaced. FNP will evaluate the use of this type gauge for this particular application.

The OATC and SO were coached on dealing with situations in which there is conflicting information present.

A training advisory notice will be sent to appropriate plant personnel to emphasize how failure to take contingency actions while resolving conflicting information resulted in a reactor trip in this event.

These actions will be completed by October 1, 1994.

ADDITIONAL INFORMATION

No similar events have been reported for Farley Nuclear Plant.

No plant system failed to function as designed during this event, and the event would not have been more severe if it had occurred under different operating conditions.

The Reactor was taken critical again on August 6, 1994 at 0511, and the main generator was synchronized to the grid at 2210 that same day.

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Dave Morey Southern Nuclear Operating Company
Vice President
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September 2, 1994

Docket No: 50-364 10 CFR 50.73

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Joseph M. Farley Nuclear Plant - Unit 2
Licensee Event Report No. 94-001-00 - Reactor Trip

Gentlemen:

Joseph M. Farley Nuclear Plant Licensee Event Report No. 94-001-00 - Unit 2 - Reactor Trip is being submitted in accordance with 10 CFR 50.73. If you have any questions, please advise.

Respectfully submitted,

Dave Morey

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Enclosure

cc: Mr. S. D. Ebneter
Mr. B. L. Siegel
Mr. T. M. Ross

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